**IT Applications Unit 3, AOS 1, Online Communities**

Complete the following, from pgs 3-14

**Networks are classified according to below and we will study the following:**

1. **Network Categories: LAN, WAN**
2. **Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet**
3. **Network communication standards**
4. **Network hardware and software**
5. **Transmission media**
6. **Network security**

**What is a network?**

1. Describe the role of a network.

* A network connects computers together so that they can share data, information and resources.

1. Describe the nature of social networking sites.

* Social networking sites are websites that allow users to exchange information, photos and videos.

1. What is meant by real time?

* Real time means there is no delay between sending and receiving a response such as a face to face conversation.

**Advantages of networks**

Elaborate under each of the following advantages of networks:

1. Resource sharing
   1. Internet connection

Has the advantage of being able to connect many computers to the internet but only having to pay for one single connection. This is a considerable advantage for organisations that use the web extensively. Obviously the connection will have to be higher if there are many users but this is still cheaper than providing everyone with their own connection.

* 1. Printing

By sharing printers it means that many computers can connect and share one printer rather than each computer needing their own printer which would be very expensive.

* 1. Software

Most software manufactures offer network licenses for their products. A site license allows organisations to use their software on various computers which is a lot cheaper than purchasing stand-alone licenses.

* 1. Other resources including network-attached storage (NAS) servers
     1. Define a NAS server

A network-attached storage (NAS) device provides file based data storage to other devices connected to the network. Technically they are a computer but they don’t have a key board or a display and are controlled and configured over a network.

1. Remote Services
   1. Describe how a B2B network operates.

A B2B network often involves an extranet. It allows businesses to network and share information or services.

* 1. What is an extranet?

An extranet is a private network that operates using internet protocols and the public telephone system.

* 1. What are the advantages of a B2B situation?

The advantages of a B2B situation are it can reduce costs for an organisation and improve their accuracy of their data processing.

* 1. Describe the nature of EFTPOS.

Electronic funds transfer point of sale (EFTPOS) is a device by which sales transactions can be directly debited to a customer’s bank account at the point of the sale through the use of a debit card.

1. Data and information sharing in organisations
   1. Outline how data and information sharing occurs through networks and how this is an advantage.

Data and information sharing through networks occurs by files being accessible for anyone that has the right to access them. Being able to access this information via the network ensures that it is available promptly and is accurate.

* 1. What is meant by the process of synchronising data?

The process of synchronising data ensures that all users have the same data set and that it is all up to date.

* 1. How does this prevent data duplication?

This prevents data duplication because as someone edits or changes a document it will change it on everyone else’s copy as they are working on it.

1. Facilitating communications
   1. How does networks facilitate communications?

Networks facilitate communications by allowing people to communicate easily within an organisation or with people outside the organisations through the use of internet. Networks improve communication between users because it becomes simpler and easier.

Types of networks, p 8

**1 Network categories**

1. Local Area Network, (LAN)
   1. Describe the nature of a LAN.

A local area network (LAN) is a network that connects nodes within a geographical area of approximately 5km; usually used in schools, offices, homes and universities.

* 1. How has the advent of wireless technology changed the nature of the definition of a LAN?

The advent of wireless technology has changed the nature of a LAN because it now means that nodes that are located outside of a building are still able to be a part of the network.

* 1. What is a Node?

A node is a computer or device that connects to a network allowing users to communicate, share resources and files.

* 1. How are LANS typically connected?

LANs are typically connected by radio waves, satellite communications, microwave or infa-red.

* 1. Describe a wireless LAN.

Wireless LANs use cabling that connects the wireless components to a wired network to allow faster access to shared resources.

1. Wide area network, (WAN)
   1. Describe the nature of a WAN including the transmission media.

Wide area networks (WAN) is a network in which communications are carried out by a medium owned by someone who is not a part of the organisation whose data is being transmitted. Using telephone lines to connect two LANs together creates a WAN. WANs use the transmission media of microwave, fibre optic, telephone lines and satellites.

* 1. List the different categories of WANs
     + - * A metropolitan area network that covers a single city
         * A state wide network that can cover an entire state
         * A national area network
         * A worldwide network such as the internet

1. **Network architecture**
2. What is meant by network architecture?

Network architecture is the design of a computer network.

Under each of the following three categories of network architecture answer the questions:

1. **Client-Server network**
   1. Describe the nature of this type of network.
   2. What is the role of a client?

The role of the client is to request data or files. Clients are not to share or send files or data expect to servers.

* 1. How does a server differ from an ordinary desktop computer?

A server differs from a desktop computer because it shares or sends data and files to those clients who ask for them. A server has the highest authority in a network.

* 1. Explain what is meant by multi-tasking?

Multi-tasking means that servers are able to process instructions from more than one program at the same time.

* 1. Describe the nature of each of the following types of servers:
     1. File server

File serves store files for use on client computers.

* + 1. Print server

Print serves accept print files and then serve them to the printers.

* + 1. Database server

Database servers hold databases and allow them to be used ty many users.

* + 1. Web server

Web servers are connected to the internet and serve webpages to viewers upon request.

* + 1. Domain name server

Domain servers translate domain names into IP addresses.

* + 1. Proxy server

Proxy servers keep a copy of all recently addressed webpages and files so that that if a page if a page is requested again it is delivered from the proxy server rather than the internet.

* + 1. Backup server

Backup servers act as a fast backup for machines in the network.

* + 1. DHCP servers

Dynamic host configuration protocol servers hand out the node number to each device.

* + 1. Active directory domain controller server

Active directory domain controller servers store directory data and manage communication between users and domains.

1. **Peer-to-peer network**
   1. Describe the nature of this network.

Peer to peer networks allow all devices to share files and resources. Each node is on the same level so they have the same level of authority.

* 1. What are the limitations of this type of network?

The biggest limitation of a peer to peer network is its efficiency. This type of network gives priority to whoever has the keyboard or mouse and makes other users wait. This makes the network slow and inefficient, this is why these networks are used at home and not in large organisations.

* 1. How does a simple home network operate?

A home network will use a peer to peer network so they can store files on any machine and be able to access them from all machines. This means that there is only one copy of the data to avoid confusion between users. When a workstation is acting as a server it is slower to respond to the user.

1. **Internet peer-to-peer network**
   1. Describe the nature of this network.

An internet peer to peer network allows users to connect to other nodes over the internet. This allows users to access each other’s files but they must enable their computers to make this possible.

* 1. How does a user set up for this type of network?

A user must enable their computer to be used for file sharing and they must be logged onto the internet at the time.

* 1. What are the risks associated with this type of network?

By using these networks you are allowing your computer to possibly be exposed to malicious software. This can cause computers to malfunction or seize.

* 1. What is BitTorrent?

BitTorrent is a software application that supports internet peer to peer networks. It allows users to copy MP3 music and other media from one computer to another.

* 1. Complete the Think about IT, 1.5 activity on pg 13.

1. **Intranets**
   1. Define an intranet.

An intranet is an internal, secured environment that is similar to the internet but acts as a LAN.

* 1. List the benefits of an intranet.
  + Access to information in an controlled manner
  + Communication within the organisation
  + Messages that log hardware and software problems with technical support personnel
  + Contracts of who to approach for various problems or issues
  + Bi-directional mechanisms
  + Training through the publication of online user guides and computer based training programs
  1. Why must an intranet reside behind a firewall?

An intranet must be behind a firewall so it is protected from access over the internet.